

Claims

1. Steering column module for a motor vehicle with a steering angle sensor (13), which is inserted into a module housing (1, 2) and whose rotor assigned to a steering column interacts with at least one stationary measuring wheel (37), at which, as a stator, electronic measuring sensors (22) connected to the on-board vehicle electrical system via a central printed-circuit board (6) of the steering column module detect changes in the angle of the steering column, characterized in that the measuring sensors (22) are fixed on the printed-circuit board (6) and the one or more measuring wheels (37) are mounted in a housing (38) fixed on the printed-circuit board (6).

2. Steering column module according to Claim 1, characterized in that the rotor and the measuring wheel (37) are formed as gears.

3. Steering column module according to Claim 2, characterized in that a first measuring gear (27) drives a second measuring gear (31) with the intermediate connection of an intermediate wheel (29), wherein measuring sensors (22) are assigned to both measuring gears (27, 31).

4. Steering column module according to Claim 2 or 3, characterized in that the first measuring gear (27) and the second measuring gear (31) each have a measuring magnet ring (28, 30), which is inserted at the ends and which interacts with the measuring sensors (22) formed as stray field sensors.

5. Steering column module according to Claim 4, characterized in that each of the measuring gears (27, 31) comprises a shielding plate for the measuring magnet ring (28, 30).

6. Steering column module according to one of Claims 1 to 5, characterized in that the measuring sensors (22) extend into the housing (38) in a position aligned with the measuring gears (27, 31).

7. Steering column module according to one of Claims 1 to 6, characterized in that a tolerance compensation device (14) arranged in the housing (38) is provided between the rotor and the first measuring gear (27) driven by the rotor.

8. Steering column module according to Claim 7, characterized in that the tolerance compensation device (14) comprises a compensation gear (23), which connects in a spring-loaded way to both the rotor and also to the assigned first measuring gear (27).

9. Steering column module according to Claim 8, characterized in that the compensation gear (23) is mounted in a cage (24) exposing its gearing in some regions and one end of this cage engages a tension spring (25), whose other end is fixed to the housing (38).

10. Steering column module according to Claim 8, characterized in that the housing (38) assembled from a cover (15) and also a base (16) supports the cage (24) of the compensation gear (23), the two measuring gears (27, 31), as well as the intermediate wheel (30).

11. Steering column module according to Claim 10, characterized in that the cover (15) has a support bolt (35) for the intermediate wheel (30), whose free end engages in a corresponding hole (36) of the base (16).

12. Steering column module according to Claim 10 or 11, characterized in that guide holes (33), which are spaced apart from each other for receiving support axles (32) for the two measuring gears (27, 31) and which engage in corresponding openings (34) of the base (16), are formed in the cover (15).

13. Steering column module according to one of Claims 10 to 12, characterized in that the cover (15) has clip arms (19) for attaching the housing to the printed-circuit board (6).

14. Steering column module according to Claim 10, characterized in that the base (16) is provided in the region of the measuring magnet rings (28, 30) of the measuring gears (27, 31) with two recesses (21), which are offset relative to each other and which project through the measuring sensors (22).

15. Steering column module according to one of Claims 1 to 14, characterized in that the measuring sensors (22) for signal evaluation are coupled with the on-board vehicle computer via the printed-circuit board (6).

16. Steering column module according to Claim 15, characterized in that the printed-circuit board (6) comprises a bus interface for connecting to the on-board vehicle computer.

17. Steering column module according to one of Claims 1 to 8, characterized in that the rotor is assigned to a cover spanning a flat spiral spring in a module housing top part (1).